REMARKS

Claims 1-7 and 9-18 are pending in this application. Non-elected claim 10 is withdrawn from consideration by the Examiner. By this Amendment, claims 1-7, 9, 11, 12, 14-16, and 18 are amended, and claims 8 and 19-23 are canceled. Support for the amendments to the claims may be found, for example, in the original claims, specifications and drawings. No new matter is added. In view of the foregoing amendments and following remarks, reconsideration and allowance are respectfully requested.

Entry of the amendments is proper under 37 CFR §1.116 because the amendments: (a) place the application in condition for allowance for the reasons discussed herein; (b) do not raise any new issue requiring further search and/or consideration as the amendments amplify issues previously discussed throughout prosecution; (c) satisfy a requirement of form asserted in the previous Office Action; (d) do not present any additional claims without canceling a corresponding number of finally rejected claims; and (e) place the application in better form for appeal, should an appeal be necessary. The amendments are necessary and were not earlier presented because they are made in response to arguments raised in the final rejection. Entry of the amendments is thus respectfully requested.

I. Objection to Claims

The Office Action objects to claims 1-9 and 11-18 for various informalities. By this Amendment, claims 1-3 and 11 are amended according to the Examiner's helpful suggestions. Accordingly, reconsideration and withdrawal of the objection are respectfully requested.

II. Rejections under 35 U.S.C. §102

A. Peterson

The Office Action rejects claims 1-9 and 11-18 under 35 U.S.C. §102(b) as being anticipated by *The Effect of Surface Probe Density on DNA Hybridization*, Nucleic Acids

Research, 29(24): 5163-68 (2001) by Peterson et al. ("Peterson"). By this Amendment, claim 8 is canceled, thereby rendering its rejection moot. As to the remaining claims, Peterson does not disclose every limitation of independent claim 1. Thus, the rejection is respectfully traversed.

By this Amendment, claim 1 is amended to recite, in part:

> 1. A method for immobilizing nucleic acid on a solid phase-substrate by co-adsorption, comprising:
> forming a composition comprising:
> a total concentration of 0.1 to 2 μM of a nucleic acid as a probe, and
> a compound or a salt thereof, the compound being represented by the following formula:
> $HS—L^1—L^2—R$ (I)
> ...
> then bringing the solid phase substrate into contact with the composition...

Accordingly, both a nucleic acid and a compound represented by formula I are mixed and formed into a composition *before* being contacted with and adsorbed to the substrate. Consequently, the nucleic acid and the compound represented by formula I are simultaneously exposed to the substrate during the adsorption step. This prevents the compound represented by formula I from adsorbing too fast to the substrate, thereby providing an "effective an superior co-adsorption method [which allows for] adsorption of a nucleic acid probe on the surface of a solid phase substrate at optimal density." See specification, page 4, lines 19-23. Consequently, the method of claim 1 can produce a biosensor having at least $1x10^2$ to $1x10^{16}$ nucleic acid molecules per cm^2 over a wide surface area. *Id.* at page 15, lines 28-29.

In contrast, Peterson, on page 5164, first column, describes that "the gold [surface plasmon resonance] substrate was exposed to DNA solution for >10 [hours] unless otherwise stated. The ssDNA-C_6-SH probe film was treated with 1mM mercaptohexanol solution for 1-2 [hours]." Accordingly, Peterson does not describe simultaneously exposing the substrate to

both a nucleic acid and a compound or a salt thereof that is represented by formula I (mercaptohexanol in Peterson's disclosure), as recited in claim 1. Instead, Peterson describes a step-wise exposure process, wherein the substrate is first exposed to a DNA solution, then followed by the exposure of the resulting substrate-immobilized DNA probe to mercaptohexanol.

Accordingly, Peterson does not anticipate claim 1, or claims 2-7, 9, and 11-18, which depend therefrom. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

B. Bawendi

The Office Action rejects claims 1-9, 11-13 and 17 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,855,551 to Bawendi et al. ("Bawendi"). By this Amendment, claim 8 is canceled, thereby rendering its rejection moot. As to the remaining claims, Peterson does not disclose every limitation of independent claim 1. Thus, the rejection is respectfully traversed.

Claim 1 as amended recites, in part, "wherein the composition comprises a nucleic acid and a compound represented by formula I at a ratio of 40/60 to 60/40." The specification describes a common problem known in the art, that "the adsorption speed of spacer molecules [such as a compound represented by formula I] is extremely rapid compared to that of the nucleic acid molecules, and obtaining adsorption at an optimal density [of nucleic acid molecules] is difficult unless there is a suitably high concentration of nucleic acid molecules in the mixed solution." Page 4, lines 10-15. The method of claim 1 remedies this problem by providing an "effective and superior co-adsorption method [which allows for] adsorption of a nucleic acid probe on the surface of a solid phase substrate at optimal density" without using a relatively high concentration of nucleic acid molecules in the mixed solution. See

specification, page 4, lines 19-23. In fact, "a high concentration of nucleic acid molecules as used in prior art is unnecessary, and a nucleic acid molecule and spacer molecule composition of roughly 50/50 (mol% ratio) can achieve the most efficient adsorption of nucleic acid molecules." See specification, page 9, lines 14-18. Accordingly, claim 1 recite a range of a nucleic acid molecule:spacer molecule ratio that produces optimal nucleic acid probe density.

However, Bawendi is silent as to a range of a nucleic acid molecule:spacer molecule ratio that produces optimal nucleic acid density. Moreover, because the prior art teaches optimizing probe density by other means, such as "controlling the time of the adsorption of the nucleic acid probe," it would be improper to infer that this limitation is inherent in Bawendi's disclosure. See specification, page 3, lines 22-24.

Consequently, Bawendi does not disclose "wherein the composition comprises a nucleic acid and a compound represented by formula I at a ratio of 40/60 to 60/40," as recited in independent claim 1. Accordingly, Bawendi does not anticipate claim 1, or claims 2-7, 9, 11-13 and 17, which depend therefrom. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

III. Rejoinder

Claim 10 is withdrawn from consideration by the Examiner because claim 10 is directed to a non-elected species. Because claim 1 is a generic claim from which claim 10 depends, and because claim 1 is believed to be allowable for at least the reasons presented above, rejoinder and examination of claim 10 are respectfully requested.

IV. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of this application are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

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Date: January 29, 2008

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